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TECHNOLOGY,CRISIS AND THE EVOLUTION OF CONSCIOUSNESS
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I. INTRODUCTION
   A. This paper is driven by the following question: *"What is happening on this planet and how can we formulate an intelligent response to it?"*
   B. This paper summarizes some of my work with the first part of this question and suggests an hypothesis that might hold some promise for beginning to address the second part.

II. THE CURRENT SITUATION
   A. Planet Earth is in a crisis situation. Torrents of multi-media materials are being produced to document this crisis, and I will not elaborate on this theme at any great length in this paper. I take it as given that:
      1. The biosphere is experiencing enormous and potentially catastrophic fluctuations in critical variables such as:
         a) Mean global temperature
         b) Chemical composition of the atmosphere
         c) Thickness of the ozone layer
      2. Virtually countless novel and potentially destabilizing chemical compounds are being released into the biosphere with entirely unpredictable results.
      3. Biological diversity is being lost at a terrifying rate.
      4. Human cultures, with the vast reservoirs of wisdom encoded in their languages and customs, are being dissolved into a vast, homogeneous, competitive and rather grim marketplace.
      5. In many respects, the quality of human life is getting poorer
         a) In areas (the 'developed' countries), vast numbers of human beings are alienated, stressed and depressed.
         b) In other areas (the 'developing' countries), vast numbers of human beings are alienated, dispossessed, terrified, starving and sick.
   B. The efficient cause for this crisis is the activity of human beings.
      1. Human beings are engendering this crisis because we are engaged in an unrestrained and uncoordinated exploration of our capacity to arrange material events according to our thoughts and images.
      2. This unrestrained and uncoordinated technical exploration has produced a runaway reaction in which we are no longer adapting, as a species, to the physical world in

which we find ourselves. Rather, we are caught in a desperate attempt to adapt to the situations which we have created by our own previous adaptations.

C. If we step back from this situation, we can see that it is leading to certain results which appear to be 'positive'.
   1. As Teilhard points out[1], human beings are increasing their power:
      a) In *extension.* The radius of our actions is being vastly increased by rapid, long-distance travel and by electronic means of communication
      b) In *depth.* We are able to manipulate Matter at more and more fundamental levels.
      c) In *volume.* The coordination of human and mechanical actions by vast 'command and control' systems enables individual humans to achieve immensely vast effects with single acts
   2. The entire human world is increasingly operating as a single system.

D. On the one hand, then, we have the overwhelming evidence of the planetary crisis. On the other hand we have the suspicion that everything will be 'OK' because this crisis, insofar as it leads to human liberation and human unification, is in line with a greater evolutionary purpose.

E. In the following two sections, I want to take a look at the evolutionary model as it has developed, particularly in Teilhard de Chardin and Sri Aurobindo. In the final section, I want to see whether those evolutionary theories give us reason to believe that we are, indeed, on 'the right track' and, if we are not, whether or not there might be another direction for us to explore.

III. THE EVOLUTIONARY EXPLANATION

A. In the middle of the twentieth century, a new evolutionary synthesis has emerged, particularly in the writings of Teilhard de Chardin[2] and Sri Aurobindo[3], which integrates scientific perspectives on the evolutionary process in Matter with a 'spiritual' perspective. Some of the main lines of this synthesis can be summarized as follows:
   1. The universe has not always been the way it is now. Rather the universe, as a whole, is in a constant and irrevocable process of transformation.
   2. Because the universe is a whole, we can expect that there are some constant factors or patterns winding through it at all levels.
   3. The universal process is, at all levels, an interplay of One and Many.
      a) In the largest sense, we are led to consider the universe, in its entirety, as a single evolving entity.
      b) On the other hand, the universe also exhibits a distinct granularity (Teilhard) or individuality (Sri Aurobindo). The universe is a whole which consists of interacting parts.
      c) This dialectic of one and many repeats itself fractally as we examine any of the parts. That is, each 'atomic' unit that we identify in our attempt to understand the universe is itself resolvable into a play of still simpler atomic parts. While

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[1] Teilhard de Chardin, Pierre, *The Activation of Energy*, Harcourt Brace Janovitch, 1970, p. 210

[2] The most comprehensive statement of Teilhard de Chardin's ideas is in: Teilhard de Chardin, Pierre, *The Phenomenon of Man*, Harper and Row, 1975.

[3] The most comprehensive statement of Sri Aurobindo's evolutionary perspective is in: Sri Aurobindo, *The Life Divine*, Lotus Lights Publications, 1990.

physicists and philosophers sometimes think that they have found some unit which they claim is ultimate, it is not clear that this process has a bottom.

4. Every individual in the universe is both a 'without' and a 'within'
   a) Since all the atoms that we identify are compounded self-organizing systems[4], and since human beings are compounded self-organizing systems, we are justified in considering human beings to be a fundamental atomic entity partially constitutive of the universe.
   b) Human beings have both a 'without' and a 'within'. The without of human beings is a highly complex and elaborately organized configuration of simpler atoms. The within of human beings is characterized by a certain luminosity of consciousness and self-reflective freedom of action. By analogy, we can hypothesize that all atoms in universe are also characterized by a certain luminosity of consciousness and freedom of action – i.e., wherever there is a without in universe, there is also a within.
   c) When we observe other structures in the universe, we can posit a clear correlation between the richness of their 'within' and the ordered complexity of their 'without'. This leads to Teilhard's 'law of complexity and consciousness'.
5. The transformative process going on in the universe is systematically ordered
   a) In particular:
      1) The earlier phases of the universal process are characterized by extremely large numbers of relatively simple systems. These simple systems (e.g., hydrogen atoms), while not entirely determined in their actions, nonetheless, by virtue of the relative simplicity of their structures, and their great numbers (which tend to 'average out' the results of their 'decisions'), exhibit a minimum of freedom and, presumably, a minimum of consciousness.
      2) The universal process incorporates a bias which tends to force those simple entities to interact with each other. (In the earliest phases of the physical universe, this bias manifests as gravitational attraction, electromagnetism, and the strong and weak nuclear forces).
      3) The universe is so set up that the interactions of these simple entities tend to engender more complex entities.
      4) This process of complexification is recursive. That is, the biases in the system which force units into interaction, and which so shape the interactive processes so that they result in the emergence of more complex structures, continue at every level. The more complex the structures produced, the richer their interactions. The richer the interactions among structures, the more complex are the structures that are produced.
   b) Thus, in general, we can say that the process of evolution starts from a multiplicity of relatively simple, relatively determined and relatively unconscious structures, and proceeds, by forcing transformative interactions among those structures, to form a series of higher order unities which are more complex, more free and more

[4] By 'self-organizing system', I mean a system which has the property of distinguishing itself from its environment by virtue of its own process. Using this language helps to distinguish 'atomic' elements of universe from compound elements such as rocks. See Varela, Francisco, J., *Principles of Biological Autonomy*, North Holland, 1979.

conscious. We identify a clear vector which moves the universal process from multiplicity towards unity, from simplicity towards complexity, from without towards within.

6. The process of complexification which characterizes the evolutionary movement takes place in at least three distinguishable ways. These are:
   a) Transformation
      1) Simple entities, through their interactions, are entirely transformed into more complex entities. E.g., hydrogen atoms, drawn together through gravitational attraction, form stars in which they are transformed into helium atoms).
   b) Association
      1) Simple entities combine together by association to form more complex entities, without losing their individual identities. E.g., atoms form into molecules, cells form into multi-cellular organisms
   c) Integration
      1) Collections of moderately complex entities, produced by transformation and association, come together to produce a higher order unity – a new type of atomic unit.
7. The step of integration introduces distinct discontinuities into the process of complexification. While we can observe in the universe as it now exists, and in the archaeological record, an almost infinite gradation of complexities, there are three integrations which are particularly dramatic – atoms, which are the building block of all inorganic systems; cells, which are the building blocks of all living systems; and minds (animal and human), which are the building blocks of all social systems.

B. We have reached a point in our own evolution at which, without this evolutionary framework, we would scarcely know how to orient ourselves in the universe at all. In a later section, we will attempt to apply this evolutionary perspective in more detail to the current situation on planet Earth. Before that, however, there is another issue which needs to be examined.

IV. THE METAPHYSICS OF EVOLUTION

A. We could characterize meta-physics as reasoning which does not take the physical world for granted, but rather attempts to account for the existence and the nature of the physical world itself.

B. Our culture has gone through a period in which metaphysics was considered by many to be unnecessary. This anti-metaphysical position was made possible, in part, by materialistic reductionism which saw in Matter qualities of self-existence and eternal existence which metaphysicians usually reserve for the Divine. An evolutionary approach, which sees Matter itself as in process of evolution, deprives Matter of its *prima facie* Divine characteristics and, thus, raises metaphysical questions in a very forceful way.

C. If our metaphysical reasoning is to be successful, it must start with some principle which satisfies at least two criteria:
   1. First, it must be a principle which does not itself require a further accounting.
   2. Second, it must be a principle which in some way contains or prefigures all that will develop from it in the course of evolution.

D. Without developing the arguments in this context, I want to suggest that the evolutionary model we are considering here commits us to a metaphysical first principle which has at least the following characteristics:
   1. In order to be a first principle, it must be infinite, eternal and self-existing. It must be an absolute will to existence.
   2. It must, in some way, embrace and contain the play of the One and the Many. It must exist, in some sense, as a process.
   3. It must, in some way, embrace and comprehend the play of the within and the without. It must contain within itself the possibility for freedom and determinism, for consciousness and for the absence of consciousness.

E. This metaphysical principle (let us call it the Divine), operates at the beginning, in the middle, and at the end of the evolutionary process.
   1. In the middle, it is present as the overall universal process. Whatever we learn about the Divine, we learn by observing ourselves and our environments (the Hermetic principle).
   2. In the end, it is present as the final point of convergence which gives evolution its vector. Teilhard examines the Divine ('Omega') exhaustively in this role.
   3. In the beginning, it is present as the source and inspiration for the entire evolutionary process. Sri Aurobindo devotes a great deal of his work to an examination of the Divine (Sachchidananda and Supermind) in this role.

F. With these considerations in mind, we can see that metaphysical questions are not just a matter of idle curiosity. In fact, in the context of an evolutionary perspective, metaphysical considerations are of the utmost *practical* importance.
   1. We are studying evolution for a particular reason – we want to know what is happening on planet Earth. Our knowledge of what is happening is useless to us if it does not give us some idea of what *might* happen (so we can move events in the directions of our choice), or of what *will* happen (so we can adapt to it). We need to know the end towards which we are evolving. We need to know, in general, the stages that we will go through in getting there. We need to know, in particular, what the next stage will be.
   2. Our knowledge of the past is practically useful insofar as it allows us to extrapolate into the future.
   3. But in an evolutionary universe centered on the Divine, knowledge of the past is ultimately knowledge of the Divine as the source (Alpha), and knowledge of the future is ultimately knowledge of the Divine as the goal (Omega).
   4. If we know something of the Divine as Alpha – in particular if we can glean something of the nature of the process by which the Divine, as Alpha, generated, or became, Matter – then we may be able to see something of the terrain that we, as beings involved in materiality, need to cross to evolve towards some kind of re-unification with the Divine as Omega.
   5. Thus we can argue that in an evolutionary perspective, the knowledge that we most need is knowledge of the Divine – metaphysical knowledge.

G. For the purposes of this paper, I propose to limit my further exploration of this vast metaphysical territory to a brief consideration of one topic: how does the Divine create?

1. Evolution in Matter is a form of creation in which new material forms and organizations are realized by complex re-arrangements of existing material elements and processes. But the Divine, the first principle of our metaphysical reasoning, logically (if not temporally) *precedes* Matter. Thus the process which produces Matter itself cannot be part of the material evolutionary sequence which science has so far studied.
2. Inspired by Sri Aurobindo, I can imagine at least five different modes in which Divine creativity might operate.
    a) When the Divine absolute, in the nakedness of its own being, manifests its potentiality for a play of One and Many, of Consciousness and Inconscience, Time and Space, it must do so timelessly and without opposition. This is creation by Divine Fiat (*Fiat Lux)*
        1) This might be
            a⁀ A creation *ex nihilo* (as Teilhard seems to imagine it), or
            b⁀ A creation out of itself (as Sri Aurobindo seems to imagine it)
        2) In a creative process of this kind, potentiality and actuality are indistinguishable. The result of this kind of creative process is a field of possible actualities, or actual possibilities. These are what Sri Aurobindo calls Real-Ideas.
        3) This absolute creativity is what Sri Aurobindo identifies as the creative process of Supermind
    b) We can imagine that, having manifested the field of Real-Ideas, the Divine might discriminate between possibility and actuality and *choose* to actualize a particular Real-Idea.
        1) The result of this kind of creative activity would be the manifestation of a determinate field of possibility – a specific potentiality for a universe
        2) This is what Sri Aurobindo identifies as the creative process of Overmind.
    c) We can imagine that, having manifested a specific field of possibility, the Divine might actualize some subset of that field by making a specific choice, limiting itself to possibilities that arise from that initial choice, choosing one of them, and so on in a linked chain of actualizations.
        1) The result of this kind of creation would be what we know as a sentient being – an individual thrown into a universe.
        2) The interface between individual and universe is what we call form or image.
        3) This is what Sri Aurobindo identifies as the creative process of Mind
    d) We can imagine a being that creates by working with images.
        1) This is analogous to the operation that we know as imagination.
        2) This is what Sri Aurobindo identifies as the creative process of Life.
        3) A very particular imagination, repetitively focused on the absolute being of the first principle, might manifest as what we call a material particle.
    e) We can imagine a process of creation that operates through the interactions of physical particles.
        1) This is what Sri Aurobindo identifies as the creative process of Matter.

H. If we take seriously this survey of the modes of divine creativity, then there is no need for us to imagine that the Divine creativity is exhausted in the production of a collection of material particles. Rather, Divine creativity can result in many kinds of being, many kinds of world. We can imagine
   1. A world of actual potentialities, an infinite field of Real-Ideas (Supermind)
   2. A specific world of possibilities for determinate being (Overmind).
   3. A world of self-actualizing ideas, or Minds, interacting with one another in a purely mental field.
   4. A world of self-actualizing images, or psyches, interacting with one another in a purely imaginal field
   5. A world of self-perpetuating patterns of energy, closed in on themselves, interacting automatically and externally – a world of material particles.

   I. Now, unless each level of this creative process entirely exhausts itself in the production of the next lower level, we are free to imagine that all of these worlds co-exist and influence each other in complex and interesting ways.
   1. We can, for example, imagine that the world of self-actualizing images – which is entirely unconstrained by physical laws, and of which physical laws are in some sense a subset – exists pervading, surrounding, and influencing the evolutionary progression of Matter. We might even imagine that it is an image of the Divine One/Many that is the nucleus of form around which the subatomic flux (what Sri Aurobindo calls the Inconscient) precipitates as the atom of Matter.
   2. We can also imagine that the world of self-actualizing ideas – unconstrained by the limitations of the concrete imagination – exists pervading, surrounding and influencing the world of images and the evolutionary progression of Matter. We might even imagine that it is a mental sense of the One/Many that is the nucleus of organization around which the atomic flux precipitates the cell, the atom of Life.

J. In the evolutionary model to which our metaphysical speculations are leading:
   1. The 'law of complexity and consciousness' which Teilhard proposes needs to be supplemented. That law holds, but it does not explain the discontinuities that occur between Matter, Life and Mind.
      a) In Sri Aurobindo's system:
         1) The transition from the Inconscient, subatomic flux to atomic Matter takes place when that subatomic flux evolves to a level of organization at which self-perpetuating forms (images) can interact with it. Thus it is a kind of interaction between the subatomic realm and the realm of images that initiates the material evolution[5].
         2) The transition from Matter to Life takes place when matter evolves to a level of organization at which self-actualizing ideas can interact with it. Thus it is a

[5] I am aware that I am playing with two different images of the Divine creative process. My first description, when I was discussing the five modes of Divine creativity, worked from the top down. Here I am discussing a process that involves interactions among the different levels as an essential element of creation. It is not, of course, possible for any given mental model to entirely delineate Divine process, but the relationship between these two ways of thinking needs further exploration. In addition, I want to make clear that this particular slant on the creative process, while probably consistent with Sri Aurobindo's thinking, is not, to my knowledge, explicated in his writings.

kind of interaction between Matter and Mind which initiates the evolution of Life.

3) The transition from Life to Mind takes place when Life evolves to the point where self-existing systems of possibility (Overmind) can interact with it. Thus it is a kind of interaction between Life and Overmind which initiates the evolution of Mind.

b) We can use a technological image to make this clearer.

1) Let us imagine that the world of radio waves is like a world of self-existing images.

2) Let us imagine that there is a robot – a material entity – which is so constructed that, over time, it turns itself into a radio receiver.

3) Finally, let us imagine that the robot, configured as a radio receiver, begins to receive, via radio, instructions from the world of images on how to further modify itself to 'incarnate' those images in the physical world.

4) We could stretch the analogy, and imagine that the instructions received by radio instruct the robot on how to turn itself into a TV receiver, where TV images are analogous to thoughts, etc.

c) When we look at the evolutionary process in this way, it sheds light on a matter that is quite obscure in Teilhard's telling of the evolutionary story.

1) Teilhard sees the evolutionary progression as a process of unification, in which material particles, by virtue of the complexity of their organization, somehow combine their 'radial' energies to form a more inward and conscious entity. But the mechanism of this radial merging is hard to imagine.

2) In the model proposed here, the organizational complexity of the material particles does not cause their radial energies to merge, but rather permits non-material entities to participate in the material evolution.

2. When we turn attention onto ourselves in the light of this model, some interesting clarifications emerge which will have significant implications as we consider possible pathways to our future evolution.

a) Concerning my constitution:

1) 'I' am not a material being. 'I' am, properly speaking, a thought. In my immediate, intimate experience, 'I' (the *cogito*) am a thought in a world of thoughts.

2) 'I' am embedded in a world of images. I have never, after all, seen or felt an atom of matter. My actual experience is an experience (through various sensory modalities) of images.

3) I come to realize the material basis of those images only by studying the peculiar restraints which keep the images that I experience from following my imagination. My materiality makes itself known to me as a set of constraints which prevent me from being the full imaginal and intellectual being that I seem to myself, at first blush, to be[6].

[6] The development of 'secondary process thinking' in Freud's sense would then be the adaptation of a mental and imaginal being to the constraints imposed on it by its material focus.

b) In a system which does not recognize the existence of subtle worlds, the evolutionary status of a human being is rather straightforward: human beings are the atoms of Mind in the universe.
c) In a system which does recognize the existence of subtle worlds, the human situation is more complex.
1) In this situation, we need to recognize two dimensions of the within.
a] There is first the dimension which Teilhard emphasizes – the sense in which all of my conscious experiences are the 'within' of which my body is the 'without'.
b] There is then the sense in which my images are within my sensations, my thoughts within my images.
2) These dimensions are orthogonal to each other. My images are more subtle, more inward, more subjective then are my sensations. But my images have their own form. That form is a 'without' of which my imagination and the subjectivity that inhabits it is a 'within'.
3) Thus in this system, human beings are not purely material, not purely imaginal and not purely mental. We are rather mental and imaginal beings, who are both a within and a without in mental and imaginal realms, but who focus all of our attention through physical bodies.

V. THE CURRENT SITUATION

A. Having, then, considered the general evolutionary model as it emerges from the scientific tradition, and having explored some possible modifications to that system based on metaphysical considerations, let's see what happens when we apply this model to the situation taking place on planet Earth today.
B. Let us take as given the general outlines of the evolutionary story which Teilhard de Chardin tells in *The Phenomenon of Man.*[7] Let us start our story with the Human, the atom of Mind.
1. Teilhard tells us how Humans cease from the evolutionary ramification that splits up other species. Humans, by virtue of their mental mode of adaptation, are able to occupy many ecological niches without a change in outer form. Thus Humans cover the entire globe, forming a thinking membrane, the noosphere.
2. By virtue of the basic evolutionary bias which forces atoms at every level to interact with each other, the Human atoms are forced to interact among themselves with greater and greater intensity.
3. This interaction of Human atoms, like the interaction of material atoms and living cells which has preceded it, produces an increasingly complex play of human associations and an increasing pace of human transformation. This process operates recursively on itself.
4. We see, then, that we can begin to make our current planetary crisis intelligible by placing it in the context of the larger evolutionary movement. The overwhelming pace, complexity and intensity of human life on the planet today is a logical outgrowth of the increasing pace, complexity and intensity of interaction characterizing all phases of the evolution that has led up to this point.

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[7] Teilhard de Chardin, Pierre, *The Phenomenon of Man*, Harper and Row, 1975.

C. What is the next step according to Teilhard de Chardin and Sri Aurobindo?
   1. Teilhard is quite convinced that the current crisis on the planet is an inevitable organic development, that we are moving inexorably towards the formation of a self-consciousness noosphere; that if the human species fails God will be, as it were, committing abortion on Himself; that we are guided by the inevitable convergence of evolution towards higher and higher unities.
   2. Sri Aurobindo also sees the current crisis as part of an evolutionary movement. In his vision, the high development of human self-consciousness now taking place on the planet creates conditions under which Supermind can fully incarnate in Matter.
      a) For Sri Aurobindo, there will not necessarily be a full unification of humanity in a single meta-organism. There are two reasons for this:
         1) First, he holds that Supermind can operate through a single human individual. It does not necessarily require an organized group.
         2) Second, he holds that human beings, as mental beings, can continue to exist on the planet even after the Supermental transformation (somewhat as animals still exist even though there are human beings).
      b) On the other hand, Supermental beings, once there were more than one, would not be individuals in the same sense that we are. They would be freed from dominance by the fragmenting influences of Mind, Life an Matter and would, among themselves, function as a unity somewhat like the unity that Teilhard de Chardin envisions for the noosphere.

VI. QUESTIONS ABOUT THE NEXT STEP

A. Having shadowed out a general evolutionary model for considering our current situation on the planet, there are three questions that I want to raise: Is the next step inevitable? If the next step is not inevitable, then are human beings on the right track for making it happen? If we are not on the right track, what would the right track look like?

B. Is the next step inevitable?
   1. Teilhard de Chardin usually speaks as if the unification of humanity into a self-conscious noosphere is a virtual inevitability. Sri Aurobindo is less sanguine. In this case, I feel compelled to side with Sri Aurobindo.
   2. In his telling of the evolutionary story, Teilhard tells of countless species that have failed and become extinct. Now for Teilhard, humanity is more than a species. It is perhaps closer to an entire planetary Kingdom (like minerals, vegetables and animals). Nevertheless, in a universe as vast and as opulent as the one we appear to inhabit, I can see no reason why not only planetary Kingdoms, but even entire planets might not fail in their evolutionary work, just as so many species have also failed.
   3. I am quite prepared to accept that evolution is convergent and that, for mental atoms, evolution will, *when it is successful*, ultimately lead to the synthesis of some super-mental higher unity. I cannot see any justification for asserting that evolution *must* be successful on planet Earth, for the particular species to which we belong.

C. Is the human species headed in the right direction?
   1. Once we admit the possibility of evolutionary failure, we are in a position to ask whether or not the human species is heading in the right direction.
   2. Let us grant that Teilhard is correct in the overall outline and that:

a) Evolution is on a path towards greater organizational complexity, the emergence of more and more comprehensive material unifications, and a deeper and deeper contact – inwardness to inwardness – of these emerging unities.
b) Those species which align themselves with the axis of this evolution are those that survive and evolve themselves to yet higher levels
c) Those species which 'lose their way', which explore byways that diverge from the privileged pathway of evolution, are doomed to extinction.
d) Human beings, as atoms of Mind, are destined by the convergent vector of evolution to more and more complex interactions leading towards an ultimate, super-centered synthesis as a single, supra-human atom.

3. Let us ask whether or not the human species, in its current direction of evolution, seems to be on the axis that Teilhard has shown us.
   a) I would like to quote a passage from Teilhard which defines this axis very clearly
      1) "What makes the primates so interesting and important to biology is, in the first place, that they represent a phylum of *pure and direct cerebralization.* In the other mammals too, no doubt, the nervous system and instinct gradually develop. But in them the internal travail was distracted, limited and finally arrested by accessory differentiations. *Pari Passu* with their psychical development, horse, stag and tiger became, like the insect, to some extent prisoners of the instruments of their swift-moving or predatory ways. *For that is what their limbs and teeth had become.* In the case of the primates, on the other hand, evolution went straight to work on the brain, neglecting everything else, which accordingly remained malleable. That is why they are at the head of the upward and onward march towards greater consciousness. *In this singular and privileged case, the particular orthogenesis of the phylum happened to coincide exactly with the principal orthogenesis of life itself*"[8]
   b) In other words, species, as they evolve, are constantly confronted by the possibility of going down blind evolutionary alleys. The central axis, the 'path', is a path of maximum generalization, maximum freedom, maximal raw, naked interaction with the evolving details of the phenomenal world. Blind alleys are those which get lost in the excessive refinement of some particular technique of interaction. If we were to use Teilhard's language, we could say that evolutionary blind alleys are those which allow the fascination with some particular possibility of 'tangential' relationship to obscure and dominate the work of enhancing and liberating the 'radial'.
   c) Prior to hominisation, species faced these decisions in the form of their bodies. Evolution either went in the direction of cerebralization, or it was diverted into peripheral development of particular bodily attributes. With hominisation, the nature of this choice has changed. Hominisation has given to human beings a certain level of mastery over material processes. Human beings can explore virtually all of the possibilities of form that species prior to us have explored without changing their physical forms. We can armor ourselves like dinosaurs, fly

[8] Ibid., p. 160.

like birds, swim like fish. Most of all, we can collectivize like insects. We are doing all of these things. And we are frantically engaged in adapting to the consequences of our own adaptive activities. *But it is not clear that any of these adaptive activities are on the main axis of evolution.*

4. Thus it is possible – even likely – that the current crisis we are experiencing on planet Earth is not a necessary and natural crisis of development, but rather a symptom of the fact that we have, as a species, become excessively fascinated with our ability to manipulate Matter, and have wandered down a dead end evolutionary byway.
5. There are several considerations that can be advanced to further support this point of view:
   a) The survival of the human race has become totally dependent on the continued functioning of a awesomely complex and highly unstable, world-spanning machine. We might look down at the horse which is specialized in swiftness, or the tiger that is specialized in fierceness. But we have become exquisitely specialized in the maintenance of this machine. The machine may, arguably, make some privileged few of us safe from certain local dangers. Those who live in middle-class suburbs of the industrial civilization, are usually warm and rarely hungry. But the machine itself spawns terrible dangers, and it is vulnerable to factors (like a dearth of fossil fuels) which would never have threatened us a species before its advent.
   b) While we are creating a semblance of human unity, it is not clear that this is a true organic unification. A true organic unification incorporates many layers of rich interconnection among its components. The human body, for example, not only supports and nurtures the individual cells that make it up, but also supports a complex interaction among many highly complex organs and organ systems. But the semblance of human unity that we are creating under the dominance of the Machine *tends to destroy the constitutive layers of complexity.* The activity of maintaining the Machine creates conditions that destroy nations, cultures, and families. We find ourselves being pulverized into a kind of atomic status. There is us, as individuals, and there is our role in the Machine. The intermediate layers are squeezed out. It is not clear whether the Machine is a unifying organic system, or whether it is a tumor in the body of the Earth.
   c) While our technology grants us a greater number of contacts with greater numbers of human beings, and while it grants us the ability to affect each other and the material world more powerfully, almost all of these contacts and almost all of these effects are *tangential.* (For example, I might get sixty emails a day. Forty or so are spam. Most of the rest are business related and, thus, tangential by definition. If I get two or three from actual friends or relatives, they are usually quick and superficial. Yet I spend a lot of my time writing and answering emails. This is am increase in tangential communications at the expense of radial ones).
      1) Teilhard maintains that genuine evolutionary advances increase communication 'center to center.' Atoms have effects on each other. Living beings can *feel* each other. Mental beings can *know* each other. The Machine allows us a greater *quantity* of contact with each other, and a greater *precision* on our knowledge of

the rest of the world. But it is not clear that is allowing us any *qualitative* deepening in our center to center communication.

2) While we have the capacity to speak almost instantaneously with almost anyone on the planet, the overwhelming majority of our communications are superficial. *The need to maintain the Machine forces us into an endless series of tangential interactions which tend to overwhelm our lives.*

d) In his essay "The Zest for Living", Teilhard says "A zest for living, *the* zest for living – such, when we get to the bottom of the problem, would appear to be the fundamental driving force which impels and directs the universe along its main axis of complexity-consciousness."[9] He points out that this zest is a variable and precarious magnitude"[10] The life that we are creating for ourselves in the Machine seems to be systematically destroying this zest for life. If the reader is not convinced of this by personal observation, I would advance the following argument:

1) Depression is the primary symptom of a deficiency of zest for life.
2) Millions of pounds of Prozac and other anti-depressants are manufactured and consumed every year.

6. For all of these reasons, then, I think it is clear that the human species, in pursuing an unrestrained program of material manipulations of the environment, has lost its way, and is no longer headed along the narrow axis of evolutionary advance.

D. If we are not on the right track, what would the right track look like?

1. Teilhard and Sri Aurobindo both tell us that human beings have reached the stage of evolution at which we need to take responsibility for the process of evolution itself.
2. Evolution, like the beings that appear in its course, has a within and a without.
   a) The without of evolution is the fantastically complex play of the physical world – the immense hierarchy of interlocked habits, lubricated and sparked by a nimbus of chance.
   b) The within of evolution is the drive for existence; the raw, implacable lust for unification that drives all self-organization; the desires of animals; the love of humankind. The within of evolution is expressed in the archetypal images that organize all phenomenal play. The within of evolution is expressed in the thoughts that connect all things possible and all things actual in elaborate webs of meaning.
3. The within of evolution has succeeded in so far bending the without of evolution to its will that it has produced human beings. It is the within of evolution that drives the process. If we are going to take responsibility for the course of evolution, it can only be by taking charge of the within.
4. Tielhard, Sri Aurobindo and mainstream scientists all agree that the evolutionary impulse that gave birth to the human race was not self-conscious. But evolution has given birth to a self-conscious being, and that being can only continue to evolve by self-conscious choice. The evolutionary future of humanity and, to some extent, of the entire Earth biosphere, will be decided by the conscious decisions of many human beings.

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[9] Teilhard de Chardin, Pierre, *Activation of Energy*, Harcourt Brace Janovitch, 1970, p. 235.
[10] Ibid., p. 235.

5. Our technology has been focused on the without of evolution. And we have focused the major part of our creative effort on our technology. But without coming to know the within, we cannot know how to direct the power that our technical mastery of Matter has given us.
6. It has been suggested that in human beings, evolution becomes conscious of itself. That may be true potentially, but it is not yet so in actuality. In human beings, and through the enterprise of materialistic technology, human beings have become conscious of some of the *mechanisms* of evolution. But we cannot claim to be evolution that is conscious of itself because we do not yet know how to find in ourselves, and to consciously own and shape, the fundamental impulse that gives evolution its vector. *The decisive technology, the technology that can get us through our present crisis, is the technology that lays hold of the power that drives evolution from the heart of subjectivity.* This is the ultimate technology. It is not the power to re-arrange the configurations of physical atoms. It is the power to wield the creative processes through which the Divine gave rise to Matter and to the entire evolutionary process. This is, in its fullness, a rather long term project. But we should not set our sights too low. Meanwhile, let us acknowledge that no amount of technical mastery in material realms can give us the knowledge that we need to harness the true evolutionary powers, the wisdom that we need to understand the direction in which evolution needs to go, or the spiritual wisdom that will teach us the proper balance of will and surrender.
7. We need to recognize that, as Teilhard suggests, our zest for life is infinitely precious. Our zest for life is the actual manifestation of evolutionary power that is most available for our use and our learning. We must come to recognize that a cultivation of our zest for life is at least as important as our pursuit of physical security and opulence.
8. If our hypothesis about evolution is correct, we will find that the zest for life is encouraged to the extent that we can provide for ourselves opportunities to further the evolutionary process. That means that the more we can create opportunities for the creation of ever new and ever more complex organizational patterns, and the more we can create opportunities for deep, inward, 'radial' contact between ourselves and other beings, the more our zest for life will flow.
9. If we put the our evolutionary movement towards the Divine, soulful community, and the zest for life in the center of our motivation, this can provide us with a framework for managing the technological enterprise.
    a) First, on the outer side, within the framework of our system we can articulate a coherent and practical set of criteria by which to engineer an appropriate technology.
        1) We must design our technical apparatus to:
            a] Encourage deep, heartfelt, thoughtful communication among people and between people and other beings.
            b] Maximize adaptive flexibility for individuals within the biosphere, and for the biosphere as a whole.

c⁾ Enable us, as we begin to become clear about the directions that we choose to take in our evolutionary work, to move in those directions.

2) I believe that most of our current technologies would fail those first two criteria. We are not yet in a position to apply the third.

b) On the inner side, we have the opportunity to realize that the most significant technology on the planet is the technology of religion. Religious technology functions by constructing symbols of thought and image that access and channel the fundamental motive force of the evolutionary process. The only way we can influence the evolutionary path of the mass of human beings is by mastering this particular technology.

1) Those who believe in progress, who assume that industrial technology is on the privileged axis of evolution, promote their religious ideas through various sorts of propoganda propogaged through mass media.

2) Because mass media are part and parcel of idustrial technology, it is ot clear that they are suitable for the propogation of new religious ideas.

c) In constructing a religion and cultivating the zest for life, we have to get very clear about the actual next steps in the evolutionary process.

1) Teilhard is quite probably correct in anticipating the eventual formation of a trans-human atom of consciousness, but this may not be the goal that we should be focusing on.

a⁾ There is reason to believe that that is a very distant goal.

i⁾ As far as Teilhard's vision of a self-conscious noosphere, we know that it must, of necessity, be an exorbitantly complex organization with many layers of subsystems. At this moment in history, the fabric of human society and the fabric of the biosphere are in tatters. Our divergence from the axis of evolution has been like a planetary disease. Even if we recover, it will take us generations to reknit the damaged tissues. Therefore, rather than focusing on forced planetization, we need to focus on repairing the planetary tissue from the bottom up.

ii⁾ Further, there is no reason to assume that our consciousness would jump from a purely individual consciousness straight to a self-conscious noosphere. It seems more probable that human beings would first form group self-consciousness on a small scale.

b⁾ In addition, it is not clear to me that at our present level of consciousness, the idea of a trans-human meta-consciousness is actually very appealing. Particularly if we imagine this consciousness as technologically mediated, it raises terrifying specters of mass 'cyborgization' [11]

c⁾ For these reasons, I suggest that we would be better off focusing first on healing the planetary web of relationship and then on exploring the possibility of establishing small-scale group consciousness.[12]

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[11] The dread of this possibility, as it is found in the popular imagination, is expressed in the figure of 'the Borg' on *Startrek, the Next Generation.*

[12] This, as I understand it, is the basic thrust of much of the teaching of D.K. in the Alice Bailey material. See, for example, Bailey, Alice, *the Rays and The Initiations,* Lucis Publishing Co., 1981.

2) While Sri Aurobindo is doubtless correct in asserting that Supermind will, at some point, manifest through a human being, this, too, may not be an immediately practical goal[13].
   a] If we do, indeed, live in a universe with many layers of interpenetrating worlds; if there are, indeed, subtle realms of self-manifesting images and self-thinking thoughts; and if those worlds are formed by creative processes which are intermediate between the Divine Fiat that makes a universe and the minute power that we, through our technology, possess to re-arrange atomic events – then there may be a practical way that we can begin to develop a truly inner form of technology.
   b] We live at the edge of a vast, unexplored space. It is the space of the inner realms, of what Sri Aurobindo calls the 'subliminal'. There are many ancient teachings and many recent experiments that attest to the objectivity of the subliminal realms: objectivity in the sense that experiences in subliminal realms can be intersubjectively verified; objectivity in the sense that information can be acquired – information relevant to material affairs – that is not accessible in purely material ways; objective in the sense that happenings in subliminal realms can predict and even influence events in the physical world.
   c] If we could stabilize our perceptions in the subliminal realms, and if we could improve the continuity of memory between subliminal states and waking states, we could achieve an extraordinary transformation of planetary consciousness.
   d] People have speculated on the transformation that might be brought about by a virtual reality cyberspace. But that space would always be mediated by physical perception. Even if the virtual reality device were hardwired to the brain there would still be severe limits to such a technically mediated space:
      i] As imaginative as the spaces might be that we could concoct in cyberspace, they would all be created by human beings.
      ii] As large as cyberspace might appear to be, it will always be subject to physical limits of processor speed and memory availability
      iii] Cyberspace would always be a subset of physical reality. In cyberspace, we would always be subject to the physical limitations of our computers and to physical death as our physical bodies die.
   e] The inner planes, on the other hand, would be the real thing. In the actual subliminal realms:

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[13] After writing this paper, I came across this quote from Sri Aurobindo, *The Human Cycle*, Sri Aurobindo Ashram, 1992. P. 236: "the elevation of the human existence will come not through material efficiency alone or the complex play of his vital and dynamic powers mastering through the aid of the intellect the energies of physical Nature for the satisfaction of the life-instincts, which can only be an intensification of his present mode of existence, but through the greatness of his mental and psychic being and a discovery bringing forward an organization of his vast subliminal nature and its forces." Characteristically, Sri Aurobindo follows this fascinating glimpse of a possible near-term evolutionary goal with pages and pages of speculations about the eventual Supermental transformation.

i] We would be in a world that is a *super*set of the physical. We would be closer to the actual Divine sources of creation. We could learn not just to experience images, but to form and to create with images - and we could do so in ways that would have an impact in the physical. We might discover that by creating an inner contact with plants and animals, we could influence them in ways that would achieve much of the same security from hunger and danger that we now enjoy by physical means, but with much less effort and much less disruption of planetary systems. In the inner planes we could explore dimensions and experiences that we literally cannot imagine while we are slavishly tied to the physical.

ii] We might actually meet, interact with and learn from alien intelligences

f] With self-conscious access to the inner planes, we might, if the old texts are to be believed, learn to experience the transition into death without losing continuity of consciousness. By the same token, we might be in regular contact with those who have died. The effect that that would have on human consciousness would be quite interesting.

g] At our current stage of evolution, the idea of entirely blowing our minds with the undiminished presence of Supermental luminosity – experiencing complete universality, knowing all other consciousness as my own, knowing myself as the transcendent One who is All – may be a bit much to take. But the idea of exploring a vast space full of imaginal possibilities, and the idea of forming associations there with other human beings – associations that would be consciously known in waking consciousness, that is an idea that might well inspire a great zest for life.

h] For these reasons, I would suggest that before we get too excited about the Supermental illumination, we might do well to explore the implications of the subliminal spaces.

VII.SUMMARY

A. The planet Earth is in crisis.
B. At the center of this crisis are human beings and their technological civilization.
C. To evaluate whether that civilization is, or is not, a good thing for people and for the planet, we need a framework. The theory of the evolution of consciousness gives us a framework that we can, provisionally at least, use for that purpose.
D. The theory of the evolution of consciousness:
    1. Demands a metaphysical accounting for the material world, and that metaphysical accounting
        a) Shows us that the actual driving force of evolution is the within
        b) Opens up the distinct possibility that the within is, at least in one of its dimensions, a penetration into subtle realms which exist independently of the physical world - surrounding, penetrating, influencing, perhaps even constituting physicality itself.
    2. Shows us that evolution has a privileged axis – an axis that leads towards the appearance of more and more complex, highly organized entities, entities which are

more and more inward and conscious, and which relate always more and more deeply, more 'radially', more center to center.

3. Tells us that the next step in evolution will be either
   a) A unification of humankind into a single, self-conscious noosphere or
   b) The emergence in Matter of a Supermental manifestation.

E. The current form of human technological civilization might, at first glance, appear to be on the privileged access leading to the next step. It does lead to great organized complexity, and to the possibility of certain kind of human unification. However, there are numerous reasons to suspect that it may, in fact, be an evolutionary tangent.
   1. It is highly specialized structure, committing all human beings to a single survival strategy. It is potentially quite brittle.
   2. It destroys many intermediate, organic, layers of structuring which would be necessary to any truly organic planetary unification. It creates a kind of uniform, self-replicating expansion, reminiscent of that of a tumor.
   3. It drives people into increasingly tangential relationships, actually impoverishing the radial depth of interaction which might lead to a higher form of unification.
   4. It focuses the greatest part of human energy on the inorganic realm, forcing the inorganic to bear the great weight of human imagination and thought, and shaping human imagination and thought in inorganic patterns.

F. If our current technological direction is, indeed, tangential to the main line of evolutionary advance, then we would do well to look for alternatives. A promising alternative should:
   1. Maintain and preserve human 'zest for life'
      a) This requires the provision of an open-ended future full of complexity and challenge, as opposed to a return to pre-technological simplicity
   2. Create opportunities for a general increase of 'radial' contact of human beings with each other and with all other entities.
   3. Allow human mastery of the actual inner forces which drove the evolution of man and which continue to drive evolution through man.

G. Specific proposals towards the development of the alternative to our current materialistic technological direction include:
   1. Focusing greater energy on religion.
      a) We can come to understand religion as the science of shaping the movement of the inner forces of evolution by discovering and refining systems of images and thoughts that channel the zest for life.
   2. Pulling our eyes back from the self-conscious noosphere and concentrating our efforts on healing the web of life that our technology as so disrupted, and on forming self-conscious groups on a less than planetary scale.
   3. Pulling our eyes back from the descent of Supermind and concentrating instead on a technology of the subliminal
      a) Such a technology would complement and reinforce a focus on the technology of religion, open new channels for more deeply 'radial' communications, and make more possible the formation of self-conscious groups of humans.
      b) Such a technology:

1) Would provide an alternative outlet for the creative energies which are now fueling the runaway, and highly problematic, materially focused, technology now dominating the biosphere.
2) Would provide the safety and comfort that we are now attempting to derive from our material technology.
3) Would provide the communicative and knowledge-enhancing functions that we now derive from our material technology.

c) Such a technology would go beyond our current technology in that:
1) It could permit the exploration of realms unbounded by the limitations of materiality – realms not created by humans and even, possibly, inhabited by interesting non-humans.
2) It would open up new approaches to dealing with all of the medical and psychological ailments that now afflict humankind.
3) It could also open up the possibility of working with the biosphere from the *inside*. It could allow us to influence events in the material world and, particularly, events in the life world, using the force of our desires and thoughts, rather than the force of our physical actions. Such a technology might produce many wonders, both frightening and marvelous.

d) To open up such a technology would certainly require an effort equivalent in magnitude to the effort which created our current technological structure.

e) The idea of such a technology is fascinating because it gets us out of the stale debate about whether we should go forward or back on our current line of development. It opens up a genuinely different possibility.

H. This paper began with the question "*What is happening on this planet and how can we formulate an intelligent response to it.*" This paper is a first formulation of a response to that question. I have more confidence in the question then I do in this particular answer. It is my hope that, in having had the temerity to advance this tentative answer, I will have invited a deeper and richer dialog about the question itself.